ON THE ADVANTAGES OF SUPRA-PUBIC LITHOTOMY, WITH A REPORT OF A CASE.[1]

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SINCE modern surgery has more and more succeeded in extending the application of antiseptic principles to the oral cavity, the rectum, and to the bladder, epicystotomy has been reclaimed from undeserved neglect. Germany and Austro-Hungary have especially contributed a respectable series of successful cases, demonstrating that many of the chief objections to this procedure have, by dint of improvements of the method, lost most of their weight. It is interesting to note that the last and most weighty opponent of this method was Sir Henry Thompson, a countryman of the brothers Dr. James Douglas and Mr. John Douglas, who in 1717 and 1718 first demonstrated on the cadaver and successfully performed on the living subject the operation, as the venerable Cheselden informs us in his excellent little treatise, "On the High Operation for the Stone," published in 1723 in London.

Viewing the more recent literature of the subject without prejudice, it must be acknowledged that the range of the indications for the performance of epicystotomy had been until recently unnecessarily narrow. The main objections raised were two: *First*, the difficulty of its performance, especially in adult subjects, which refers principally to the danger of injuring the peritonæum. *Second*, the difficult after-treatment, involving the knotty question of suturing the bladder or choosing the open treatment instead, and finally the avoidance of urine infiltration and its consequences.

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Garson and Petersen have shown that distension of the rectal pouch by a suitable soft rubber bag filled with water, when in position, will raise a full bladder of an adult subject sufficiently above the level of the symphysis pubis to permit a free incision of six centimetres in length into the organ without the least risk of cutting the peritonæum.

Willie Meyer, lately of Bonn, at present of this city, reported in 1884, in Langenbeck's "Archiv," forty-one cases of suture of the bladder, sixteen of which were successful; in seventeen cases suppuration followed, but ended in cure. Eight patients died in consequence of the operation—one of erysipelas and seven of septicæmia. The results reported since by Bergmann, Antal, and others have much improved, which may be undoubtedly ascribed to a more careful selection, all cases accompanied by septic processes being rejected and treated by the open method.

The open method, however, as advocated and practiced by Dr. Trendelenburg, offers the greatest safety as regards avoidance of septicæmia due to urine infiltration, phlegmon, or erysipelas. An essential part of this is the semi-prone posture of the patient to be observed after the operation. In this position not a drop of urine can be retained in the bladder, but it must escape through a soft drainage-tube suitably attached.

The enormous advantages of epicystotomy in cases where an exact exploration of the bladder by touch and sight becomes necessary need not be dwelt upon. The exact diagnosis of the more intimate relations of one or more encysted stones and their removal, the stanching of rebellious cystic hæmorrhages by ligature or the cautery, the diagnosis and safe and complete removal of cystic tumors, will be rational and safe processes, even in cases of a very much enlarged prostate, instead of being hap-hazard, dangerous and often incomplete and unsatisfactory endeavors, as they frequently must be if the perineal section is exclusively employed.

Not wishing to take up too much of your time, I refer you, for a closer study of the merits of the question, to the lucid and very interesting paper of Dr. Meyer alluded to ("Arch. f. klin. Chir.," vol. xxxi, p. 494), which contains abundant casuistic

material to bear out every statement made therein in favor of the operation.

I deem it proper to bring the subjoined case to your notice, although it terminated fatally, first on account of its inherent pathological interest, and chiefly because it was marked by perfect safety and ease in exposing and incising the bladder with hardly any loss of blood, and by the facility with which the stones could be grasped and extracted under the guidance of the eye from bladder and diverticulum. The history is as follows:

Martin Gyr, a Swiss laborer, æt. 50, was admitted to the German Hospital on April 8. He stated that he had been suffering from difficulty of micturition for more than ten years, having had no treatment whatever until within a few days, when a cystic stone was detected by Dr. Meyer, at the German Dispensary. The usual symptoms of the most pronounced character were present. The patient could not retain more than an ounce of water, and had to urinate every fifteen minutes by day and night. Examination of the alkaline urine gave evidence of intense cystic catarrh and of pyelo-nephritis, casts and pelvic epithelia being found. The filtered urine contained a considerable amount of albumin.

The patient presented an abject picture of emaciation, pain and suffering, and was delighted at the possibility of getting relief by an operation. Slight elevations of temperature were observed every evening.

Physical examination demonstrated a normal condition of the internal organs, excepting the kidneys and bladder; anæmia, with rapid and rather feeble pulse. The stone-searcher established the presence of stone in the bladder, but, fearing a possible reaction, no extended examination and measuring of the stones was insisted upon. So much, however, was clear, that the much-contracted bladder contained either a single large or a number of smaller stones. By introducing the finger into the rectum a rather massive protrusion of a hard body toward that organ could be felt. The patient was made comfortable by the free administration of opiates, and all endeavors were employed to improve his general condition by abundant stimulation and food. In weighing the admissibility of an operation, the wretched state of the patient made it clear that any operative interference would be fraught with unusual danger from shock, yet, in view of the fact that longer delay was inadmissible, and that, unrelieved, the patient would have

to succumb soon and certainly, it was decided proper to offer him a chance, however slender, of recovery by operation. Regarding the selection of the method, it had to be borne in mind that a prolonged anæsthesia, such as litholapaxy would render necessary, was inadmissible in this case. A grave objection to any one of the perineal sections was the unavoidable hæmorrhage, the amount of which varies considerably in different cases, can never be estimated beforehand,and occasionally is serious. The high operation was naturally thought of, first, because it would permit bloodless access to the bladder; second, because it would permit rapid completion of the extraction of the stone or stones; and, finally, because it would secure perfect drainage. The question which anæsthetic should be employed was decided in favor of chloroform, on account of the danger that the administration of ether would entail in the presence of the renal condition.

On April, 12, the patient having been brought under the influence of chloroform, a soft-rubber bag was introduced into the rectum and was distended by about 500 c. c. of tepid water. After this the bladder was filled with 200 c.c. of tepid boro-salicylic solution. A longitudinal incision was carried through the integument and linea alba down upon the fascia transversalis with minute loss of blood, commencing at about three inches from and extending downward to a little beyond the symphysis. The fascia transversalis having been severed, the peritonæum became exposed to view, and doubts were entertained about the possibility of now incising the bladder. Thereupon it was decided to inject 100 c. c. more of fluid into the bladder. While this was done it could be distinctly seen how the bladder rose up from behind the symphysis, pushing before it the reflected fold of the peritonæum marked by a clearly defined transverse depression. An incision of one inch and a half being made into the bladder, its contents escaped. The edges of the incision were drawn apart, the remnant of the boro-salicylic solution was mopped out, and thereupon the presence of more than one stone could be seen and felt. First an ovoid, smooth, hard stone was grasped and extracted. After this a second rather rough, very hard stone became visible, which was not so freely movable as the former, but seemed to be attached somewhere on its posterior face, and yielded only after being forcibly rotated. On inspection, the freshly broken-off surface of a stalactitic projection was seen on its posterior side, indicating that a continuation of it had existed, projecting either into a ureter or into a diverticulum. This second stone showed two facets—a large one corresponding to the round smooth stone first extracted, and another smaller one of apparently re-

cent formation! On introducing the finger into the bladder, a conical stone was felt to project from a diverticulum situated posteriorly and to the left side, the site of this corresponding to the resistant tumor felt in the rectum. The index-finger was cautiously inserted into the orifice of this diverticulum, which was felt to yield to this gentle dilatation. A forceps grasped and extracted the stone easily from its bed.

It was clear that another stone remained to be extracted; but, the patient having been under the influence of the anæsthetic for twenty minutes and his pulse becoming thready, it was deemed imprudent to continue further search. As it was intended to leave the incision open, the extraction of this remaining stone, it was thought, could be easily accomplished at the first suitable occasion. A number of camphorated ether injections were administered hypodermically and the patient was put to bed. Previous to this a T-shaped drainage-tube, prepared according to the directions given by Trendelenburg, was inserted into the bladder, and another drainage-tube was passed into the bottom of the diverticulum. The position occupied by the patient in bed was semi-prone, his left hip resting upon a ring-shaped air-cushion, his knees being drawn up, and his back being supported by a number of pillows held up by the back of a chair. The skin of the belly was freely anointed with vaseline, and a pus-basin was placed underneath the projecting ends of the drainage-tubes, from which urine was seen to escape in driblets. Hot bottles and stimulants were used, but, in spite of the insignificant loss of blood and of the small quantity (10 grammes) of chloroform used, the shock of the operation proved to be too great. He rallied three or four times, to relapse into a collapsed condition, and died five hours after having been placed in bed.

This not wholly unexpected result of the operation proves that the resistence of the patient had been lowered to such an extent that even this mild and bloodless procedure led to a fatal termination, and that any other operation, such as lithotrity or a perinæal section, would have caused death more speedily. Further, it seems to be clear that in this case an extraction of the stones from the diverticula by the lower operation or lithotrity could not have been accomplished.

On post-mortem examination, the fourth stone, contained in a smaller diverticulum, was removed. It was then seen that its detection and extraction could have been easily accomplished. The aggregate weight of the four stones was 51 grammes, the heaviest being the round smooth stone extracted from the bladder itself, weighing 22½ grammes, its longitudinal diameter being 3½ cm., its transverse diameter 2½ cm. The next in weight, 15 grammes, was a pear-shaped stone re-

moved from the larger diverticulum, its length being $4^1/_2$ cm., its thickness 3 cm.; its apex, which had projected into the bladder, showed an oblique facet corresponding to the smaller facet of the other stone found in the cavity of the bladder. The third stone just alluded to as found in the bladder was irregularly shaped, having two facets and a stalactitic fracture-surface about $^1/_2$ cm. in diameter. This weighed 10 grammes, and was apparently one with the fourth; the smallest stone found in the second diverticulum, which weighed $3^1/_2$ grammes, was pear-shaped and was $2^1/_2$ cm. long and $1^3/_4$ cm. wide. All the stones show, where they have not been worn smooth, a crystalline surface of whitish color. They consist of alternate layers of carbonate and of oxalate of lime, the latter substance preponderating.

In studying the position and relations of these stones it seems almost certain that there were originally only two stones present, the largest smooth one being the oldest. The remaining stones must have been originally one body, the main part of which was situated in the bladder and gradually sent out two pear-shaped projections, each of which was found to be lodged in a diverticulum of corresponding size. The larger one, the presence of which could be felt before the operation by touch through the rectum, must have been broken off some time previous to the operation. The fractured surfaces, preserving apposition, became worn into facets. The peristaltic motion at defecation may have played an important part in the production of this phenomenon.

The post-mortem examination revealed a normal urethra, enormous concentric hypertrophy of the bladder, the two diverticula above described within its posterior wall, and very much distended ureters. The latter resembled infantile small intestines, their width varying between 1 and 3 ctm., the thickness of their walls also varying to a considerable extent. The greatest amount of distension was noticed in that part of the ureters lying next to the bladder. Both kidneys were somewhat enlarged, their capsule could be stripped off very easily, color pale, calices and pelves much thickened and dilated, the kidney tissue in an advanced state of fatty degeneration.